

BUREAU OF AUTOMOTIVE REPAIR

INITIAL STATEMENT OF REASONS

Hearing Dates: April 10 and 12, 2002

Subject Matter: Low Pressure Fuel Evaporative Systems Test

Sections Affected: § 3340.42, Title 16, Division 33, Chapter 1, Article 5.5, California Code of Regulations

Specific Purpose of the Regulatory Proposal:

This regulatory proposal is designed to implement one of the recommendations made by the California Air Resources Board (CARB) on how to improve the effectiveness of the Smog Check Program (Program). Specifically, the provisions of this proposed regulation require that, beginning July 1, 2002, vehicles have a low-pressure test of the fuel evaporation systems when undergoing a smog check inspection. Stations will have to purchase a tester certified by the Bureau of Automotive Repair (Bureau) to conduct the low- pressure test, and the test is to be performed according to specific procedures recommended by the tester manufacturer.

The pressure test will ensure that fuel vapors collected from the fuel tank are stored in the charcoal canister and sent to the engine to be burned at the appropriate time but not released into the atmosphere. Fuel vapors are really raw hydrocarbons, a crucial ingredient in the formation of photochemical smog and an ozone precursor. Currently, to reduce evaporative emissions, smog check technicians are required to perform a visual liquid fuel leak inspection and a visual inspection of the evaporation system. However, there is no guarantee that a passing visual test equals a leak proof system. The same is true for the gas cap test since an effective gas cap is of little value if the evaporative system is leaking.

If the fuel evaporation system is not airtight, the system's efficacy is severely compromised. Vapors from the fuel tank will be released into the atmosphere, and when the system purges, ambient air instead of gasoline vapors will be sent to the engine to be burned. Studies have shown that 20% of automotive hydrocarbon emissions may be traced to evaporative sources such as the fuel tank or carburetor float bowls.

The Bureau estimates that the addition of the low-pressure test will reduce hydrocarbon emissions by 3.5 tons per day (tpd). The test will essentially consist of the technician using a BAR certified evaporative tester to pressurize the vehicle's fuel evaporative control system with nitrogen while the tester monitors the system for possible excessive pressure decay caused by a leak.

This proposal makes the following changes to existing regulation by amending Section 3340.42:

1. Adds a new Subsection (c) to Section 3340.42, which establishes the operative date of the low-pressure fuel evaporative systems test as July 1, 2002.
2. Adds paragraph (c)(1), which specifies the vehicles that are exempt from the low-pressure test. The vehicles are exempted for the following reasons:
 - A. 1996 and newer vehicles with series II On-Board Diagnostics (OBD II) because these vehicles have on board computers that monitor the efficacy of the fuel evaporative control system. If the evaporation control system is not operating properly, the vehicle's Malfunction Indicator Light is illuminated. An illuminated MIL will cause a vehicle to fail a smog check inspection.
 - B. Vehicles on BAR's incompatibility list because the vehicles on this list have design features such as hard steel vapor lines that render pressure testing infeasible. BAR intends to make this list available to stations and technicians electronically as well as in paper form.
 - C. Vehicles powered by fuels other than gasoline – Alternatively fueled vehicles use fuels that are highly pressurized and therefore are not compatible with this type of testing.
 - D. Vehicles not originally equipped with a fuel evaporation control system – A vehicle without a fuel evaporation control system cannot be tested.
 - E. Vehicles with a fuel evaporative canister and fuel vapor hoses that are not readily accessible and would require the partial dismantling of the vehicle in order to gain access to them for testing. If a technician determines that the test is infeasible, the technician shall write on the vehicle inspection report the location of the canister and the fact that an evaporative pressure test was not performed.

The unfeasibility exemption is critical to prevent long inspection times and consumer inconvenience. Perhaps more important, however, is the concept that this exemption will serve as a buffer to restrain the potential increase in inspection costs. Without the exemption, a technician could conceivably spend hours disassembling a vehicle to find the charcoal canister. The hours of disassembly and re-assembly could conceivably raise the inspection price to levels that would either lead to consumer complaints or program noncompliance, or both.

3. Paragraph (c)(2) requires that smog check stations conduct the low-pressure test using a tester that has been certified by the Bureau. This subdivision also establishes the capabilities and capacities of the tester. Specifically, the tester must compensate for

ambient temperature, fuel tank volume, and fuel volatility to ensure consistent and accurate tests.

4. Paragraph (c)(3) specifies the proper inspection and data entry procedures for technicians to follow. In general, technicians have to seal off the charcoal canister and then, using the tester, pressurize the remainder of the system. Of course, technicians shall follow the directions supplied by the tester's manufacturer. If the tester detects a leak (using pressure decay algorithms), the vehicle fails the inspection. At the conclusion of the test, the technician shall return the vehicle to its original configuration.
5. Paragraph (c)(4) provides that repairs performed at a licensed smog check station to correct a failed fuel evaporative test shall apply toward the repair cost minimum for obtaining a temporary waiver, as established in Section 44017 of the Health and Safety Code. In addition, under the provisions of the Bureau's Consumer Assistance Program, the Bureau could subsidize these repairs if the owner of the vehicle qualifies as low-income or the vehicle was directed to a test-only station. However, it is unlikely that this will have any effect, since the average cost of such repairs is approximately \$50.00. Consumers will probably not be inclined to spend the \$20.00 for the low-income co-payment and get involved in the application process only to receive around \$30.00 in repair assistance benefits. It is even more unlikely that consumers whose vehicles are directed to Test-Only stations and fail this test will apply for assistance since their co-payment is \$100.00. In most instances, the test-only directed consumer would not have to spend enough for repairs to even meet the co-payment requirement.
6. Paragraph (c)(5) establishes that performance of the low-pressure fuel evaporative test does not excuse the technician from performing a visual inspection of the fuel evaporative control system or a liquid fuel leak inspection.
7. Existing Subsection (c) is renumbered as (d).

Factual Basis:

In late 2000, the CARB released a report on the effectiveness of the Program. CARB's report indicates that while the current Program is reducing a significant amount of motor vehicle emissions, improvements to the Program must be made if California is to meet federal air quality standards. For example, California's 1995 State Implementation Plan - the blueprint submitted to the United States Environmental Protection Agency (USEPA) that explains how the state will achieve compliance - claimed an emissions reduction of 112 tpd for the Program. After careful analysis, the emissions reductions associated with the Program are closer to 65 tpd.

From many perspectives, achieving compliance with the federal air quality standards is vital to California. The federal government may withhold highway trust funds or impose

other sanctions on the state, including the implementation of a federally designed Smog Check Program. Noncompliance has already triggered a Notice of Intent to sue California and a third-party lawsuit against local metropolitan planning agencies, which rely on the emission reductions of the Program to acquire approval and federal funding for transportation improvement projects.

While these economic concerns are important, improving the air quality is essential to the health of all Californians. Senior citizens, the infirm, and children are at greatest risk from poor air quality. The USEPA estimates that between five and twenty percent of the population is especially susceptible to the effects of ozone, an airborne chemical that reacts in adverse ways with internal body tissues.

Underlying Data:

- 1995 State Implementation Plan
- *Evaluation of California's Enhanced Vehicle Inspection and Maintenance Program (Smog Check II)*, California Air Resources Board, July 2000
- *Evaporative Emissions for Late-Model In-Use Vehicles*, Sierra Research, October 1999
- *Evaporative Emissions Impact of Smog Check*, Eastern Research Group, August 2001

Business Impact:

Smog Check Stations

This regulation will have a significant effect on smog check stations since they will have to purchase a Bureau certified tester at an estimated cost of \$1,000 and incur an estimated cost of \$200 annually for the nitrogen needed to pressurize the system. The tester manufacturer will specify the required level of purity for the nitrogen supply.

Some Test-and-Repair Stations may invest in an additional piece of equipment in order to be able locate and repair leaks that are identified when a vehicle fails the low-pressure test. The standard industry practice is to use a smoke generator to introduce smoke into the fuel evaporative system, under pressure, and then look for leaking smoke. A pressurized smoke generator costs approximately \$1,800.

It should be noted that most new car dealerships already have this equipment. Many Test-and-Repair Stations may already have it as well. It is commonly used in the industry today and is already necessary to enable Test-and-Repair stations to locate and repair fuel evaporative system leaks. However, the smoke generator is not the only method for finding leaks. There are several other alternate methods that could be used, but none are as effective or convenient as the smoke generator. The Bureau does not have any

information available from which to determine how many stations may already have smoke generators, so it is not possible to estimate the potential cost.

Since the Bureau does not have the statutory authority to regulate inspection prices, it is anticipated that inspection costs will rise as stations attempt to recoup their investment and the additional time (approximately 10 minutes) that it will take to perform this new test, as an additional component of the Smog Check inspection. Stations will also recover their investment by the increased repairs necessary to correct failing vehicles.

Consumer Impact

As mentioned above, stations will more than likely increase the inspection price to offset the expenditures for the testers, the nitrogen supply, the pressurized smoke generators and the time to perform this additional test. Currently, it takes approximately 20 to 30 minutes to perform an inspection and the average price of an inspection is \$46.30. Since the low-pressure evaporative test should not take longer than an additional ten minutes to administer, and based on past experience and an average rate of \$60/hour, the Bureau estimates that the cost will not increase more than \$10 initially. As technicians become more proficient in conducting the test cost will most likely stabilize. In addition, since smog checks are only required every two years and upon a vehicle's transfer of title (and in some areas of the state, only upon transfer of title), the increased price of an inspection is not a cost incurred monthly or even annually. However, there are approximately 8,061,612 vehicles between model-years 1974 and 1995 that will be subjected to the new test annually. Based on this, the Bureau estimates that the overall increase in test costs will be approximately \$80,061,612.

From a repair perspective, the Bureau estimates that 20% (1,213,106) of the vehicles from model-years 1974 through 1992 (6,065,531) that are subjected to the new low-pressure test procedure will fail. *[While the new test procedure will be applicable to 1974 through 1995 model-year vehicles, these types of failures typically do not occur in vehicles 9 model-years old or newer.]* The current failure rate for the same affected group of vehicles (1974-1992) is approximately 18% (1,088,667). Most of the vehicles that will fail the new test procedure would fail anyway, but is not possible to determine exactly how many. Furthermore, the types of failures that will be detected by this new test procedure are rarely found during the current test procedures. The Bureau estimates that less than 2% of these failures are detected without the low-pressure fuel evaporative systems test. The Bureau also estimates that repair costs associated with the low-pressure test will average approximately \$50, with most of the failures stemming from split or deteriorated hoses or loose or missing hose clamps. Therefore, the additional repair cost to individuals is estimated to be approximately \$54,589,779.

Specific Technologies or Equipment:

This regulation mandates the use of specific technologies or equipment. Such mandates or prescriptive standards are required for the following reasons:

This regulation mandates the use of new or specific technologies or equipment -- a Bureau certified low-pressure fuel evaporative tester. However, Section 44036 of the Health and Safety Code requires that the Bureau certify the inspection equipment used in smog check stations. Certification is necessary to ensure uniform and consistent tests throughout the State.

The Bureau has expended considerable resources in identifying the parameters that may alter the results of the test. For example, on a hot day, the pressure generated inside the tank by expanding fuel may mask a leak of considerable size. The volume of fuel present in the tank also changes the pressure decay calculations needed to determine if the vehicle passes or fails the low-pressure test. Without compensation for these variables, accurate and consistent tests are simply not achievable. Therefore, certification is necessary to prevent these types of variables from occurring.

Consideration of Alternatives:

No reasonable alternative which was considered or that has otherwise been identified and brought to the attention of the Bureau would be either more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed regulation.

Set forth below are the alternatives which were considered and the reasons each alternative was rejected:

- The Bureau did consider the testing equipment and procedures suggested in Part 51.357 of Title 40 of the Code of Federal Regulations. Part 51.357 calls for technicians to pressurize the gas tank with what could be characterized as a bicycle pump and use a manometer to monitor pressure decay. The cost of such equipment is approximately \$200 or less.

This approach does not compensate for temperature variations or fuel tank volume. Without correct compensation calculations, vehicles may falsely pass or fail the test and could possibly expose vehicle owners to unnecessary repair expense. The Bureau concluded that these devices would not meet the needs of the program, and would be far less effective than the selected alternative.

- The Bureau also surveyed the tool and equipment marketplace to determine if an existing evaporative tester were available that would meet the specific needs of the California Smog Check Program. As a part of this effort, the Bureau purchased two existing pressure testers and put the testers through a series of trials. The cost of these devices was approximately \$1,000.

After a careful and thorough evaluation of the trial data, the Bureau found that the testers did not provide accurate and consistent test results under all conditions. Consequently, given the wide range of testing conditions, the Bureau concluded that

these products would not meet the needs of the Program, would not be as effective and would be comparable in cost to the alternative selected.